

## Special Article

# END TB by 2025: Way forward to Achieve this Mission while Recovering from the COVID-19 Pandemic

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**T**he COVID-19 disease caused by the novel corona virus, severe acute respiratory syndrome corona virus 2 (SARS-CoV2), has upset the major public health care system throughout the world. Originating from Wuhan, China, it was declared as a health emergency by WHO on 30<sup>th</sup> January 2020. It quickly spread around the globe in more than 200 countries and was declared a 'pandemic' on 30<sup>th</sup> March 2020. By February 2021, there have been more than 11 crore cases and 25 lakh deaths worldwide, as reported to WHO.<sup>1</sup>

On 30 January 2020, India reported its first case of COVID-19 in Thrissur, Kerala.<sup>2</sup> On 12 March, a 76-year-old man, with a travel history to Saudi Arabia, became the first COVID-19 fatality of India. As it steadily began to wreak havoc throughout the country, the Government of India banned international flights from 22<sup>nd</sup> March 2020. The country took several measures to contain the spread of pandemic which includes lock-down of the entire country for nearly forty days from 25<sup>th</sup> March to 31<sup>st</sup> May 2020.

Apart from preventive measures to contain the spread of the virus, the Government of India also took several measures for public involvement and boosting the morale of healthcare workers throughout the country. Before implementing the full lockdown, the Prime Minister announced a 14 hour 'Junta Curfew' on 19<sup>th</sup> March 2020. At 5 pm that day, all citizens were asked to stand in their doorways, balconies, or windows, and clap their hands or ring their bells in appreciation for the professionals delivering essential services. In the following days, the media was persistently broadcasting messages regarding public awareness and the importance of healthcare services. Flowers were showered over hospitals by helicopters in several cities. Again, on 5 April, citizens all over India cheered and showed solidarity with the health

workers, police, and all those fighting the disease by switching off the electric lights at home lighting diyas, candles or flashlights, and spread awareness regarding prevention. After a rising trend for several months, the daily new cases finally started showing a downward trend from the middle of September. To re-enforce the practices of mask wearing and social distancing, the Government announced a 'Jan Andolan' against COVID 19, with the aim to involve and motivate the masses to stop the spread of COVID 19. The message- '*jab tak davai nahi, tab tak dhilai nahi*' was broadcasted. On 16<sup>th</sup> January, the Government approved 2 vaccines against COVID 19, kickstarting the vaccination programme against COVID 19. By the end of February 2021, the disease has infected more than 1.1 crore and killed more than 1.5 lakh people throughout the country.

Before COVID-19 became a global pandemic, India was dealing with another, much older epidemic—tuberculosis (TB)—which affected 26.4 lakh Indians in 2019 and killed nearly 4,50,000 people in the country. That is over 1000 TB deaths every single day, well before COVID-19 entered the picture.<sup>1</sup> In fact, no country has a higher TB burden than India, which accounts for a quarter of the 1 crore global TB cases and 14 lakh TB deaths each year.<sup>3</sup>

Tuberculosis has been infecting humans for at least 35,000 years, probably closer to 2.6 million or even 3 million years. Previously it has been considered to have an animal origin, but recent studies using molecular genetics now suggest that human TB predated that in other animals, including cattle. Tuberculosis is referenced in ancient texts from all over the globe, including the *Rig Veda* dating around 1550 BC. It was termed as 'phthisis' in Hippocrates in Book 1, Of the Epidemics (410-400 BCE). On March 24, 1882, Dr. Robert Koch announced the discovery of *Mycobacterium tuberculosis*, the bacteria that causes. In 1839 J.L. Schonlein suggested that the word "Tuberculosis" be used as a generic name for all the manifestations of phthisis. A century later, March 24 was designated World TB Day.<sup>4</sup>

Until the advent of chemotherapy, treatment for TB was limited to warmth, rest, fresh air and nutrition.

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The history of TB drugs starts around 1940 with the development of para-amino salicylic acid (PAS) and streptomycin in 1944. However, after the development of the rifamycins in the 1950s, no new drugs were to become available for the next fifty years, until delamanid and bedaquiline became available in 2012.<sup>4</sup>

On 13<sup>th</sup> March 2018, the Prime Minister of India set for the country an ambitious goal of Ending TB by 2025, 5 years ahead of the Global target. The aim was to end the TB epidemic, with targets to reduce TB deaths by 95% and to cut new cases by 90% compared to that was in 2015; and to ensure that no family is burdened with catastrophic expenses due to TB. To achieve these goals, the RNTCP, India developed the National Strategic Plan (NSP) 2017-2025. The notification of tuberculosis cases was fortified by means of a Gazette Notification on 16<sup>th</sup> March 2020 (published 19<sup>th</sup> March 2020), which criminalised the failure to notify cases, carrying an imprisonment of 6 months to 2 years, or a financial penalty or both. To boost notification, financial incentives were announced for private doctors and informants. Active Case Finding was made a priority, and mobile medical vans were utilised in remote and tribal areas where conventional establishments were not possible. As malnutrition is associated with a higher risk and morbidity of tuberculosis<sup>5,6,7</sup>, a nutritional support scheme- 'The Nikshay Poshan Yojana' was launched in April 2018, which provided every patient Rs.500 monthly till the completion of treatment. Different choices for Information and Communication Technologies (ICT) were used for adherence support, such as Real Time-Medication Event Reminder Monitor (RT-MERM), 99DOTS and automatic pill counters were utilised.<sup>8</sup> In September 2019, the Union Minister for Health and Family Welfare launched the '*TB Harega Desh Jeetega Campaign*', to boost community participation, along with the National TB Prevalence Survey. The 4 pillars of the programme were modified from Detect-Treat-Prevent-Build to Build-Prevent-Detect-Treat, to emphasise the task of augmentation and capacity building of infrastructure and manpower related to the programme. As a result of these efforts, the notification rates steadily increased till 2019, with the number of 'missing cases' decreased from 10 lakh in 2017 to 2.9 lakh in 2019.<sup>6</sup> In January 2020 the RNTCP was renamed as the National Tuberculosis Elimination Program (NTEP). A revised draft NSP 2020-2025 is under preparation to enhance these strategies.<sup>9</sup> The COVID-19 pandemic has disturbed the balance jeopardizing various TB control activities working in full swing and despite political commitments at the

highest level.<sup>10</sup>

The COVID 19 pandemic placed unprecedented demands and pressure on the health system.<sup>11</sup> Health facilities and workforce are diverted and assigned a wide variety of activities related to controlling the outbreak. While the public health system was collapsing under the stress of the growing COVID-19 caseload, the private healthcare system became expensive and challenging to access.

When India went into a stringent lockdown, anecdotal evidence suggested that citizens were having difficulty accessing routine health services. A large part of the health resources had to be diverted in identifying and containing COVID-19 cases. Many hospitals were designated as 'COVID-19 only', and others restricted non-COVID services for fear of outbreaks. It was seen that seeking healthcare was deferred because of social/physical distancing requirements or community reluctance owing to perceptions that health facilities may be infected.<sup>12</sup> Despite efforts by the authorities, there were severe shortages of drugs, ventilators and personal protective equipment, especially in the initial months of the pandemic. More than 700 doctors were martyred in the fight against COVID-19<sup>13,14</sup>. In the later months of the pandemic, drugs such as ivermectin were used for prophylaxis<sup>15</sup> and treatment of mild to moderate cases of COVID 19.<sup>16,17</sup>

As such, all the essential services provided by National Health programmes had come to a record low levels. The country being one of the highest tuberculosis burdens globally had committed to eliminate TB by 2025. A potentially serious setback was caused by COVID pandemic on the ongoing TB control activities across the country. The routine programmatic activities like case-finding, initiation of treatment, follow-up and contact tracing were worst affected. The stigma around TB is well recognised. Stigma around COVID-19 also emerged as a concern in 2020. People were hesitant to get tested for the fear of being tagged or quarantined. And because TB and COVID-19 have similar symptoms (cough and fever), stigma delayed the diagnosis of both conditions.

A mathematical model was developed by the STOP-TB partnership, which predicted that that a 3-month lockdown and a protracted 10-month restoration could lead to an additional 63 lakh cases of TB between 2020 and 2025 globally, and an additional 14 lakh TB deaths during this time. The impact of the same on India was estimated to be an additional 18 lakh cases and an additional 5 lakh deaths due to TB. The global TB incidence and deaths in 2021 was estimated to increase to levels last seen in 2013 and 2016

respectively, implying a setback of at least 5 to 8 years in the fight against TB, due to the COVID-19 pandemic.<sup>19</sup>

There were a total 24,01,585 TB cases reported on the national online TB surveillance system- Nikshay portal in 2019, following a steady increase over the past few years. At the beginning of the lockdown, weekly counts of reported cases already dropped by 75% in the three weeks following 22 March (average 11, 367 weekly cases), the date of a strict national lockdown implementation, compared to an average of 45,875 weekly cases during the previous weeks of 2020. This drop was at least partly attributable to a combination of factors including delays in entering the data onto the real-time national online TB surveillance system Nikshay, reduced attendance to health services and reassignment of health personal. The notification rate did subsequently rise in the later months of 2020, leading to a total of 18,08,919 notified cases in 2020, achieving less than 60% of the target notification and a drop of around 25% compared to the previous year.<sup>19</sup> While the data regarding mortality trends in 2020 is not yet available, it may be speculated that factors such as increased mask usage, physical distancing, practice of respiratory hygiene and decreased public movement of infective cases of tuberculosis may have helped in reducing transmission and mortality due to TB in 2020.

In September 2020, the National TB Elimination Programme (NTEP) announced a Rapid Response Plan to mitigate the impact of COVID-19 Pandemic on TB Epidemic and NTEP activities, including a bi-directional TB-Covid-19 screening,<sup>20</sup> intensified case finding, replacement of sputum smears with rapid molecular testing, home-based sample collection and delivery of TB medicines, and modification of the DOTS approach to include digital adherence technologies, call centres and family members to provide treatment support.

The first priority should be catching-up on all the missed patients with TB who were missed during the pandemic.<sup>21</sup> There are several innovative apps now available for real-time geospatial tracking of COVID 19 cases, and similar ones could be developed for tuberculosis.<sup>22</sup>

Even as existing molecular technologies such as GeneXpert and TrueNAAT are being repurposed for COVID-19 testing, the NTEP must continue the using these for tuberculosis testing as these tests are critical for early detection of drug-resistant TB.<sup>23</sup>

Because administration of injectable TB drugs can be challenging during the pandemic, it is important to adopt the WHO-recommended all-oral, shorter drug

regimens for drug-resistant TB. It also important to increase BCG vaccination coverage and catch up on all the missed BCG and other vaccinations during the past year<sup>10</sup>

The grim situation though has a silver lining to it. The COVID-19 pandemic could help reduce the number of pulmonary TB patients as well, due to multiple factors. The worldwide movement against COVID 19 has led to a widespread usage of face masks and coverings in public as well as in closed spaces. The size of *Mycobacterium* is much larger than the Sars-Cov2 virus, and its transmission is possibly more efficiently prevented by face masks, provided they are used correctly. The practice of physical distancing will help in the reduction of TB transmission as well. A strict enforcement of lockdown and restricted public movement likely helped in the reduction of transmission of not only COVID 19 but TB as well. Greater use of such infection control measures can help further reduce TB transmission. Alternative arrangements to reduce visits for TB follow-up, precautions for sputum collection, transportation and testing should be prioritized. Existing recommendations for infection prevention and control for TB and for COVID-19 should be strictly implemented, including availability of personal protection equipment.

There are now digital X-rays being developed with artificial-intelligence technologies that can rapidly screen for both TB and COVID-19. There are several innovative apps now available for real-time geospatial tracking of COVID 19 cases, and similar ones could be developed for tuberculosis.<sup>2</sup>

It is imperative to strengthen and advance the capacities District TB centres and other Peripheral Health Institutes (PHIs) involved in the detection and treatment of tuberculosis to streamline the control of tuberculosis. Special campaigns, as have been done during polio and COVID-19 control programmes, should be adopted for tuberculosis as well. We do have Mr Amitabh Bachchan as the brand ambassador for the NTEP, and we need more such ambassadors at the national, state, regional and local levels. Public representatives and administrative officers such as MPs, MLAs, Pradhans, and religious and community leaders should be involved to stir a mass movement for the elimination of TB. Various platforms such as electronic, print and social media should be used extensively for public awareness, and should be complimented by plays, 'nukkad nataks', wall writing and pamphlets. Tuberculosis detection and awareness camps should be organised during various

governmental and non-governmental gatherings such as *Tehsil diwas*, festivals, exhibitions, *Kumbh* and other *melas*, etc. A '*Jan Andolan*' should be declared against tuberculosis, just as was done against COVID 19.

The pandemics caused by both SARS-CoV-2 and *Mycobacterium tuberculosis* has been so severe and difficult to contain because neither of the pathogens tends to respect geographical and social barriers. Crucial interactions between COVID-19 and TB need to be anticipated and understood since both the diseases have some similar respiratory symptoms. A surprisingly rapid response in developing treatment plans against COVID-19 at a global certainly proves how the existing programs could be significantly improved and lessons learnt from this must be applied to other infectious diseases, including TB, where a similar emphasis on clinical and research activity would no doubt have a very large impact. As both COVID-19 and TB are transmitted by aerosols, strategies like physical distancing, mask, respiratory and overall hygiene may also help in reducing the transmission of TB as well. Community engagement has proven essential in TB control to address stigma, which has already been associated with COVID-19. It is time we transform this unprecedented adversity into a groundbreaking opportunity.

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(1)e. ; (2)d. ; (3)c. ; (4)a. ; (5)a. ; (6)c. ; (7)c. ; (8)d. ; (9)a. ; (10)c. ; (11)e. ; (12)d. ; (13)c. ; (14)d. (15)d.